Milwaukee County 800 Mhz Trunked Radio System

Executive Summary

Overview

Milwaukee County utilizes a Motorola SmartNet II 800 MHz Trunked Simulcast radio system. The radio infrastructure consists of nine (9) tower sites, two (2) of which are receive-only, covering 242 square miles of fairly level terrain. The SmartNet system utilizes 14 analog frequencies at each site.

The system is used by 19 of the 21 municipalities within Milwaukee County for first responder and other public safety agencies. One of the remaining municipalities also uses a Motorola 800 MHz trunked system that serves as a backup site. In addition, various regional, state, and federal agencies also have equipment configured to utilize this system.

System maintenance and repair work is completed by third party vendor contracts. A third party vendor is responsible for system key administration, including all radio programming/templating/repair.

Subscriber Units

There are approximately 4300 subscriber units (portables, mobiles, etc.) in use across all the agencies. These units are broken down roughly as such: Milwaukee County departments and agencies have approximately 2500 subscriber units. Municipalities using our infrastructure have roughly 1500 subscriber units. State and federal agencies as well as other nearby jurisdictions utilizing mutual aid frequencies have approximately 300 subscriber units. The vast majority of the portables are Motorola MTS2000 model.

In addition to the SmartNet II system, Milwaukee County operates a Motorola simulcast Astro LE P25 system. The P25 system includes a single transmit/receive site as well as a single receive-only site. Both are physically located at one of the existing tower locations. This site covering the North Eastern portion of Milwaukee County uses five (5) additional frequencies. There are roughly 150 subscriber units in place using this digital site that are not included in the paragraph above.

Interoperability - Mutual Aid

Milwaukee County currently utilizes two levels of mutual aid offering agency interoperability.

There are 4 ICALL/ITAC repeaters distributed around the county. Two are located at one of the highest tower sites in Milwaukee County, along the north shore of Lake Michigan. One is located on the west side of the county and one is located on the south side of the county.

Milwaukee County also offers 5 talk groups configured on all subscriber units consisting of one hailing and four regular use groups. These 5 talk groups are used mainly for inter-agency events and offer an easy path to interoperability amongst agencies.

The neighboring county, Waukesha, has many subscriber units templated with these 5 local talk groups.

Ongoing discussions with Waukesha regarding mutual talk-group mapping is starting. These mappings will bring our agencies closer to seamless communications in the future.

BDAs

Several locations throughout Milwaukee County are configured with Bi-directional amplifiers for improved building coverage. Examples include 2 BDAs within the Courthouse/Safety Building Complex in downtown Milwaukee.

Milwaukee County Transit System (MCTS)

In 1992, Milwaukee County installed a communications system designed by Westinghouse Electric Corp. specifically for the transit industry. Westinghouse later became Transportation Management Systems (TMS)/Orbital Sciences Corp. The communications system integrates voice, data, and Automatic Vehicle Locating (AVL) equipment. The system is technology driven incorporating a number of micro processor controlled devices.

The Transit System's communication system was designed around the Motorola Spectra two-way FM radio. The Spectra radio is a wideband, frequency synthesized fixed tuned mobile radio designed to operate in the 851-869 MHz bands.

Each of the roughly 650 buses have an Intelligent Vehicle Logic Unit (IVLU) which receives input from a GPS antenna mounted on the bus roof.

The overall system allows the dispatch center to locate a vehicle in an emergency as well as monitor route schedule adherence to assure on-time performance.

At present, this complex system with its IVLU and AVL, handset and associated wiring are possibly incompatible with any other radio model and will need to be replaced. It is believed that as of April 2005, Motorola does not have a radio that will interface with this system.

MCTS dispatch center has five (5) work stations, each equipped with a Centracom II console powered by a Motorola Spectra radio. Each station also has a CAD/AVL computer that interfaces with the Spectra radios. When the transit system's Spectra radios need to be replaced, the dispatch consoles will also need to be replaced or updated.